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Claim Listing:

1. (original) A disk drive, comprising:
 - a cache memory having a plurality of sequentially-ordered memory clusters for caching disk data of disk sectors identified by logical block addresses; and
 - a cache control system having
 - a plurality of cluster control blocks, each cluster control block having a cluster segment record for associating the cluster control block with a particular memory cluster and for forming variable length segments of the memory clusters without regard to the sequential order of the memory clusters;
 - a tag memory having a plurality of tag records, each tag record for assigning a segment to a contiguous range of logical block addresses and for defining the cluster control blocks forming the segment, and each segment of the memory clusters for caching disk data of the assigned contiguous range of logical block addresses.
2. (original) A disk drive as defined in claim 1, wherein the cluster segment record of each cluster control block associated with a segment includes a pointer to a subsequent cluster control block or to indicate an end cluster control block of the segment.
3. (canceled).
4. (canceled).
5. (canceled).

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6. (original) A disk drive as defined in claim 1, further comprising a microprocessor that de-allocates an existing assigned segment and assigns the segment's associated cluster control blocks to a free list if a sufficient number of cluster control blocks are not available on the free list to enable caching of a range of logical block addresses requested by a host command.

7. (original) A disk drive as defined in claim 1, wherein the memory clusters are uniformly sized.

8. (original) A cache control system for caching disk data of disk sectors identified by logical block addresses using a cache memory having a plurality of sequentially- ordered memory clusters, comprising:

a plurality of cluster control blocks, each cluster control block having a cluster segment record for associating the cluster control block with a particular memory cluster and for forming variable length segments of the memory clusters without regard to the sequential order of the memory clusters; and

a tag memory having a plurality of tag records, each tag record for assigning a segment to a contiguous range of logical block addresses and for defining the cluster control blocks forming the segment, and each segment of the memory clusters for caching disk data of the assigned contiguous range of logical block addresses.

9. (original) A cache control system as defined in claim 8, wherein the cluster segment record of each cluster control block associated with a segment includes a pointer to a subsequent cluster control block or to indicate an end cluster control block of the segment.

10. (canceled).

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11. (canceled).

12. (canceled).

13. (original) A cache control system as defined in claim 8, further comprising a microprocessor that de-allocates an existing assigned segment and assigns the segment's associated cluster control blocks to a free list if a sufficient number of cluster control blocks are not available on the free list to enable caching of a range of logical block addresses requested by a host command.

14. (original) A cache control system as defined in claim 8, wherein the memory clusters are uniformly sized.

15. (Amended) A method for caching disk data of disk sectors identified by logical block addresses using a cache memory having a plurality of sequentially-ordered memory clusters, and using a plurality of cluster control blocks, each cluster control block having a cluster segment record, the method comprising:

providing a plurality of cluster control blocks, each cluster control block having a cluster segment record for associating a the cluster control block with a particular memory cluster using the respective cluster segment record, wherein the cluster segment record is also and for forming a variable length segment segments of the memory clusters without regard to the sequential order of the memory clusters;

forming a segment of memory clusters and assigning the -a- segment to a contiguous range of logical block addresses; and

defining the cluster control blocks forming the segment, each segment of the memory clusters for caching disk data of the assigned contiguous range of logical block addresses in the memory clusters of the assigned segment.

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16. (original) A method for caching disk data as defined in claim 15, wherein the cluster segment record of each cluster control block of a segment includes a pointer to a subsequent cluster control block or to indicate an end cluster control block of the segment.

17. (amended) A method for caching disk data as defined in claim 15, further comprising de-allocating ~~allocating~~ an existing assigned segment and assigning the segment's associated cluster control blocks to a free list if a sufficient number of cluster control blocks are not available on the free list to enable caching of a range of logical block addresses requested by a host command.

18. (original) A method for caching disk data as defined in claim 15, wherein the memory clusters are uniformly sized.

19. (original) A disk drive as defined in claim 1, wherein the cache memory is separate from the tag memory of the cache control system.

20. (original) A cache control system as defined in claim 8, wherein the tag memory is separate from the cache memory.